



## CLASS SPECIFICATION

<u>TITLE</u>	<u>GRADE</u>	<u>EEO-4</u>	<u>CODE</u>
CRAFT WORKER-IN-TRAINING IV	29	H	9.465
CRAFT WORKER-IN-TRAINING III	28	H	9.466
CRAFT WORKER-IN-TRAINING II	27	H	9.467
CRAFT WORKER-IN-TRAINING I	25	H	9.468
OPTIONS FOR ALL LEVELS IN THE SERIES			
A: PAINTER			
B: PLUMBER			
C: WELDER			
D: AIR CONDITIONING/REFRIGERATION SPECIALIST			
E: HEAT PLANT SPECIALIST			
F: CARPENTER			
G: ELECTRICIAN			

## SERIES CONCEPT

Craft Workers-in-Training: 1) serve a four-year period of time in a training status; 2) successfully complete required job related courses by attending college courses or manufacturer's demonstrations, seminars and equipment displays; 3) are supervised on any job relating to the trade by a journey level craft worker; 4) study the practical applications of the option during the required four-year training period; 5) are tested periodically to gauge the trainee's progress; 6) are examined by the line supervisor and a supervisor of another craft on the completion of each year of the four-year training period; 7) perform the work of the trade and other pertinent duties as assigned by the supervisor; 8) respect the property of the employer and abide by the working rules and regulations of the agency and State personnel policies; and 9) develop safe working habits to ensure the safety of the employee and fellow workers.

Perform related duties as assigned.

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## CLASS CONCEPTS

Craft Worker-in-Training IV

**Option A - Painter:** Incumbents analyze the requirements for a given job and carry out all aspects of the work involved in a near journey level manner. They become proficient in the finish, sealing, and varnish of hard woods, railings, furniture and related items; with the aid of manufacturer's instructions and supervision, learn metal painting, surface preparation, compatibility to paints and methods of application; become proficient in applying special wall coverings such as vinyl, paper, and burlap, preparing specialized surfaces, and applying the proper material on surfaces and in areas such as swimming pools, flumes, high humidity areas, and laboratories. They also become familiar with the purchasing procedures of the agency, proper use of the limited purchase order book, its limits and use of purchase order numbers for large purchases as issued by the agency.

**Option B - Plumber:** Incumbents become proficient in the service, repair and care of plumbing equipment, cleaning procedures, replacing lines, and performing emergency repair requiring remodeling and the replacement of equipment. They learn to troubleshoot, service and repair controls for systems and components such as heating systems, basic electricity, line voltage, low voltage, instruments, pilot generator, thermostats, line control aquastats, flues and vents; learn procedures related to the installation of transit pipe including cutting, beveling assembly, glass pipe, cutting bead rolling, quick bead couplings, hangers and supports. They also become familiar with various types of plastic pipe including PVC, polypropylene, and polyethylene and the solvents, equipment and tools used in installation.

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### CLASS CONCEPTS (cont'd)

#### Craft Worker-in-Training IV (cont'd)

**Option C - Welder:** Incumbents continue to develop skills in the metal fabrication field and accomplish jobs with minimal supervision. They lay out and fabricate metal work such as hand rail and piping systems, and cut and grind fitted joints according to plans; learn the basic operation of the metal lathe and operate the machine when assigned by the supervisor; learn the principles and operation of heliarc welding and perform jobs using this process as assigned by the supervisor. Incumbents must satisfactorily pass any examination given for journey level rating and certification.

**Option D - Air Conditioning/Refrigeration Specialist:** In addition to fulfilling the craft obligations to the required level of skills, the following responsibilities are added: heat pump, servicing and installation; heating and air conditioning application and systems; humidifying and dehumidifying; heating and air conditioning, cleaning, controls, instruments, and heating and cooling loads; the study of psychrometrics; special heating and air conditioning applications; technical characteristics; blueprint and schematic reading; water treatments, heating and cooling; practical applications of fans and blowers; vacuum pumps, applications and repair; and preventive maintenance programs. While the bulk of these are learned on the job, specific instruction is also provided by the supervisor.

**Option E - Heat Plant Specialist:** Incumbents learn to test heating water samples to determine requirements for water treatment chemicals; learn to install, adjust and calibrate heating-cooling thermostats; install pump seals and bearings; take voltage and current readings on electric motors using appropriate test instruments; and service, adjust and calibrate heating and domestic water temperature controls. They also service, adjust and maintain water distilling equipment; overhaul and adjust oil burners, fuel pumps and ignition transformers and exercise judgment in making repairs. They also successfully complete such available job related courses of study as required by the supervisor.

**Option F - Carpenter:** Incumbents continue to develop skills in the carpentry trade while accomplishing jobs with minimum supervision; work from plans and work orders; and perform jobs assigned by the supervisor. They become acquainted with the purchasing system established for small purchasing at the agency and keep accurate records of labor performed and material costs on work orders. The experience and training gained in the four years should adequately train the apprentice to satisfactorily pass the examination for journey level carpenter.

**Option G - Electrician:** Incumbents continue to develop skills in the electrical trade while accomplishing work assignments with minimum supervision. This phase of structured training and on-the-job work experience expands on earlier training in tools and material applications, electrical safety and diagram reading. Emphasis is placed on advanced electrical principles required for special systems such as fire/burglar alarms, communication systems, energy-management systems, transformer connections, advanced meter applications, high voltage fundamentals, and unique wiring characteristics for special occupancies and equipment such as health care facilities and swimming pools.

#### Craft Worker-in-Training III

**Option A - Painter:** Incumbents operate striping machines used by the agency; learn to clean and adjust the spray gun and become familiar with working pressures, how to make adjustments, and proper care and cleaning of equipment; understand plans and specifications; calculate square footage of surfaces and estimate materials for jobs; and use airless spray equipment. They learn operation of equipment as well as the methods of cleaning, field breakdown and repair, disassembly, and replacement of packing and

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## CLASS CONCEPTS (cont'd)

### Craft Worker-in-Training III (cont'd)

#### Option A - Painter (cont'd)

seals. They also reassemble and adjust equipment for proper operation. They use color schedules as provided to mix paints which include applying knowledge of manufacturer's symbols to ensure correct amounts when mixing colors.

**Option B - Plumber:** Incumbents learn the principles and elements considered in system design including pipe sizing, water pressure, friction loss, code requirements for back flow preventors, vacuum breakers, specific gravity, siphons, and water hammer. They become familiar with the mechanics of gases, evaporation of liquids, and corrosion; become proficient in rigging and learn safety procedures and proper methods of handling supplies and equipment such as ropes, cable and hoisting equipment; and learn to use lead for forming and fitting flashings, shower pans, burning and soldering.

**Option C - Welder:** Incumbents perform welding and metal fabrication jobs using initiative and knowledge to solve problems whenever possible; understand the work order system and keep accurate records of time and materials. They may perform small jobs such as sign work and equipment repairs. They also grind, level and fit corrections for welding, brazing or soldering.

**Option D - Air Conditioning/Refrigeration Specialist:** Incumbents familiarize themselves with basic refrigeration and air conditioning systems; laboratory systems; commercial systems applications, installations and servicing; heat loads and piping; absorption systems, principles, practical applications, and servicing; pneumatic control systems, installation and servicing; electronic control systems, installation and servicing; special refrigeration devices and applications; and fundamentals of heat pumps.

**Option E - Heat Plant Specialist:** Incumbents learn to troubleshoot, clean and adjust oil and gas burners; install and service furnace blowers, fan and limit switches; and service boiler safety controls and feed water controls.

**Option F - Carpenter:** Incumbents perform jobs in the carpentry trade using initiative and knowledge to solve problems and organize jobs to which assigned. They perform small remodel jobs, service and maintenance work orders independently, and assist in fabricating cabinets and bookshelves. They become proficient in the safe and proper use of power tools used in shop work and learn about carpentry related items that may be assigned to the carpenter shop for repair or installation such as installation of reflected ceilings, floor finish, tilework, roof installation and repair, placing of concrete, setting screeds and forms and finish work.

**Option G - Electrician:** Incumbents apply training in lighting and electrical motor fundamentals to work assignments. This stage of the electrician internship program emphasizes AC and DC motor principles for single phase and polyphase motors. Training and on-the-job applications in motor circuits include wiring sizing, overload protection, motor connections and overcurrent protection. They also acquire working knowledge of the general requirements for commercial wiring which provides the trainee with the ability to work with specifications and blueprints to determine the steps in a comprehensive electrical project.

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## CLASS CONCEPTS (cont'd)

### Craft Worker-in-Training II

**Option A - Painter:** Incumbents learn specifications and formulas for paint, codes, fire hazards, and safety requirements; and formulas used to estimate and calculate the amount of material required for a given job. They also learn to safely set up and use ladders and scaffolding; understand terms of the trade such as pot life, open or closed containers, water base, oil base, synthetic base, epoxy, airless spray, conventional pot pressure spray, the names of various brushes and rollers, motorized and swinging scaffolding, ladder and plank and other items relevant to the painting trade.

**Option B - Plumber:** Incumbents learn skills in understanding plans, such as plot plans, floor plans, isometrics, symbols, specifications, and diagrams; application of plumbing to both wood and concrete construction; interpretation of codes related to waste, sanitary sewers, gas and water; calculating 22-1/2°, 45°, 60°, and 72° offsets; volume and area of pipes and containers; proper water treatment practices; water mains and services; installing cross connections, pumps and lifts.

**Option C - Welder:** Incumbents become familiar with terms for the different metal shapes, capabilities and adaptation; different ferrous and non-ferrous metals used in the trade; and learn the working and welding characteristics of each. Incumbents become familiar with sheet metal equipment and under supervision perform simple forming, shaping, joining and installation of sheet metal work; and learn to recognize thickness and how to use a metal gauge when necessary. They also learn the limits of the machinery such as the shear and brake, exercise care in the use of equipment while observing safety precautions; carry out simple repair jobs or installations as assigned.

**Option D - Air Conditioning/Refrigeration Specialist:** Incumbents use skills learned in the first year to perform installation and repairs on agency systems and learn practical applications of the following craft areas: refrigeration and air conditioning; electricity; electric motors; electric controls and circuits; schematics; pneumatic controls; refrigerants; tools and materials for welding, soldering and brazing.

**Option E - Heat Plant Specialist:** Incumbents learn to overhaul high temperature water generators, boilers and domestic water tanks for insurance inspection; clean and service oil burners; maintain and service water pumps; service and blow down low pressure boiler controls; clean water sides and fire sides of low pressure water and steam boilers; service oil and gas fired hot air furnaces and controls; service and repair hot water pumps, condensate return pumps, receivers and steam traps; service and install power activated convector and radiator valves; learn the different types and uses of pipes and the techniques of pipefitting.

**Option F - Carpenter:** Incumbents become familiar with the lay terms used in construction work, framing walls, and joist placement; all areas of rough carpentry performed in light construction and remodeling, and the various types of lumber used in the trade. They learn to identify the different types of finished lumber and the grade and allowable uses of the different grades in construction. Incumbents also become familiar with the hardware used in rough carpentry including hardware used in framing, roofing, concrete placing, and the National Building Code as it pertains to structural strengths of different building materials in order to understand spacing and spans of wood materials used in framing of walls, joists and rafters. They work with a journey level carpenter on door and window installation and repair and become familiar with the different types and styles of locksets and multiple keying systems; perform simple repair jobs and installations as assigned.

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## CLASS CONCEPTS (cont'd)

### Craft Worker-in-Training II (cont'd)

**Option G - Electrician:** Incumbents learn to read and understand blueprints and construction drawings, gain experience working with alternating currents (AC), and develop a working familiarity with the characteristics of induction, electrical instruments, meters, fuses and circuit breakers. Particular emphasis is placed on underground ducting, the installation of wire ways and surface raceways, general wiring requirements, and the identification, application, and installation of wires, cords and cables.

### Craft Worker-in-Training I

**Option A - Painter:** Incumbents develop skills in the following procedures and methods of paint application and related work: care and protection of areas where work is being done; proper use of drop cloths and other protective coverings; maintaining a clean work site and proper cleanup at job completion; surface preparation and paint application with regular tools of the trade such as roller and brush; care and maintenance of tools and equipment; care and storage of paint materials; nomenclature of paint including oil base, synthetic base, lacquers, varnish, and stains; basic composition of these paints and the commonly used thinner for each. Incumbents also assist in performing sheet rock finishing, taping, filling and sanding, patching, and plastering of masonry surfaces.

**Option B - Plumber:** Incumbents learn basic plumbing procedures such as: safe work practices; nomenclature of pipe and fittings, such as cast iron pipe (hub type and no hub), screw pipe, copper pipe, and plastic pipe; measuring pipe (allowances); hand tools including wrenches, cutting tools, reamers, stock and dies, caulking tools, soldering equipment, and power tools; job projects including storm drains, soil pipe waste and vent, traps, gas and water fixture rough in, sprinkler systems, fixture and valve installation and repairs, pipe supports, bracket supports, bracket inserts, and hangers.

**Option C - Welder:** Incumbents learn mathematics involved in layout and design of fabrication from plans or sketches; develop skills in the handling and care of the tools and equipment of the trade; learn safety regulations and develop safe working habits; become familiar with and learn to properly use all hand tools of the trade and with proper instruction begin operating power tools such as bank saws, grinders, drill press, cut off saw, and metal shear; learn basic fundamentals and use of the welding equipment, oxygen acetylene torch and the electric arc welder and low heat torches used for soldering.

**Option D - Air Conditioning/Refrigeration Specialist:** Incumbents learn various facility installations and operation of thermostats, start-stop pumps, motors, fans, and blowers; become familiar with typical problems and participate in the repair and installation of systems; learn fundamentals of refrigeration, air conditioning, heating, electricity, electric motors, controls and circuits, schematic reading, pneumatic controls, refrigerants, tools and materials, welding, soldering and brazing, and safety.

**Option E - Heat Plant Specialist:** Incumbents learn to operate high temperature water generators, combustion controls, generator pumps, system pumps and pump controls; keep hourly logs of central heat plant operating conditions as defined in the daily operating log; learn the principles of fluid flow, fuel-air ratio and heat transfer; temperature-pressure relationships in hot water and steam heating systems; learn the operation of the computerized building management equipment located in the central heat plant control room; maintain clean, safe conditions in work areas.

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### CLASS CONCEPTS (cont'd)

#### Craft Worker-in-Training I (cont'd)

**Option F - Carpenter:** Incumbents learn mathematics involved in layout and design of work by working from simple plans for construction. They develop skills in the handling, care and operation of tools of the trade such as power saws, drill press, band saws, rip saws, cut off saws, power drills, and powder actuated stud guns; learn safety regulations and develop safe working habits. They also assist in roof patching, cement finishing and perform labor such as rough grading, finish grading, placing concrete, and cleanup.

**Option G - Electrician:** Incumbents learn electrical theory and perform electrician work by successfully completing training on the National Electrical Code, general electrical safety, tools of the trade, electrical theory and trade mathematics. Coursework and on-the-job training address a number of basic electrical relationships concerning direct current (DC) series and parallel circuits. Training and work experience provides a working familiarity with conduits, outlet and service boxes, connectors, conduit bending, insulation and pulling wire.

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### MINIMUM QUALIFICATION

#### SPECIAL NOTES AND REQUIREMENTS:

- \* The Craft Worker-In-Training Program requires that incumbents spend one year at each level during which they receive specialized training, and progression to the next level in the series may only occur upon completion of training and with the recommendation of the appointing authority. Failure to complete the training within the specified time frame will result in termination from the program unless there are extenuating circumstances which will be reviewed by the appointing authority.

#### CRAFTS WORKER-IN-TRAINING IV

##### ALL OPTIONS

**EDUCATION AND EXPERIENCE:** Completion of one year of service as a Craft Worker-in-Training III and successful completion of three-fourths of the prescribed related instructional assignments in the Craft Worker-in-Training Program. (*See Special Notes and Requirements*)

**ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES** (required at time of application):

**Working knowledge of:** code and safety requirements. **General knowledge of:** State and agency purchasing regulations and procedures. **Ability to:** work independently and follow through on assignments with minimal direction; *and all knowledge, skills and abilities required at the lower levels.*

**FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES** (typically acquired on the job):

**Working knowledge of:** standard practices, methods, materials, tools and equipment used in the trade. **General knowledge of:** agency policies and procedures pertinent to work unit operations. **Ability to:** estimate the materials and time required to complete projects. **Skill in:** diagnosing and correcting defects; performing a variety of skilled work processes in the trade.

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### MINIMUM QUALIFICATION (cont'd)

#### CRAFT WORKER-IN-TRAINING III

##### ALL OPTIONS

**EDUCATION AND EXPERIENCE:** Completion of one year of service as a Craft Worker-in-Training II and successful completion of one-half of the prescribed related instructional assignments in the Craft Worker-in-Training Program. *(See Special Notes and Requirements)*

**ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES** (required at time of application):

**Working knowledge of:** terminology used in the trade. **Ability to:** read and interpret blueprints, plans, specifications, and schematics relevant to the trade. **Skill in:** operating and maintaining tools and equipment used in the trade; *and all knowledge, skills and abilities required at the lower levels.*

**FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES** (typically acquired on the job):

**Working knowledge of:** types, characteristics, and uses of materials used in the trade. **Skill in:** performing non-complex repair and maintenance work independently.

#### CRAFT WORKER-IN-TRAINING II

##### ALL OPTIONS

**EDUCATION AND EXPERIENCE:** Completion of one year of service as a Craft Worker-in-Training I and successful completion of one-fourth of the prescribed related instructional assignments in the Craft Worker-in-Training Program. *(See Special Notes and Requirements)*

**ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES** (required at time of application):

**General knowledge of:** systems, components, and methods relevant to the trade; terminology used in the trade; *and all knowledge, skills and abilities required at the lower level.*

**FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES** (typically acquired on the job):

**Working knowledge of:** safe working procedures and the proper use, storage, and disposal of hazardous materials. **General knowledge of:** code and safety requirements; types, characteristics, and uses of materials used in the trade. **Ability to:** perform mathematical calculations pertinent to the trade. **Skill in:** performing basic maintenance and repair work in the assigned trade.

#### CRAFT WORKER-IN-TRAINING I

##### ALL OPTIONS

**EDUCATION AND EXPERIENCE:** Graduation from high school or equivalent education and completion of a three-credit postsecondary course in a vocational or mechanical field related to the trade; **OR** graduation from high school or equivalent education and one year of semi-skilled experience in the general mechanical or construction fields that demonstrate an ability and dexterity to operate tools and equipment; **OR** an equivalent combination of education and experience. *(See Special Notes and Requirements)*

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### MINIMUM QUALIFICATIONS (cont'd)

#### CRAFT WORKER-IN-TRAINING (cont'd)

#### ALL OPTIONS (cont'd)

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

**Ability to:** learn the principles and techniques of the trade; learn proper use and care of hand tools and mechanical equipment utilized in the trade; follow oral and written directions; maintain records and reports; write sufficient to prepare repair orders, requisition supplies, and document the condition of buildings and equipment; read and understand repair orders, service manuals, and operating system manuals; communicate effectively with co-workers; safely lift materials and equipment used in the trade; work on ladders and scaffolding and in confined building access areas if required by the trade.

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (typically acquired on the job):

**General knowledge of:** basic principles of the assigned trade; safe working procedures and the proper use, storage and disposal of hazardous materials. **Ability to:** establish and maintain cooperative working relationships with co-workers and agency staff.

This class specification is used for classification, recruitment and examination purposes. It is not to be considered a substitute for work performance standards for positions assigned to this class.

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ESTABLISHED:	12/15/78	12/15/78	12/15/78	12/15/78
REVISED:				5/12/80-3
REVISED:	6/19/80-3	6/19/80-3	6/19/80-3	6/19/80-3
REVISED:	10/25/85-3	10/25/85-3	10/25/85-3	10/25/85-3
REVISED:	12/19/85-12	12/19/85-12	12/19/85-12	12/19/85-12
REVISED:	11/13/87-3	11/13/87-3	11/13/87-3	11/13/87-3
REVISED:	7/1/91P	7/1/91P	7/1/91P	7/1/91P
	11/29/90PC	11/29/90PC	11/29/90PC	11/29/90PC
REVISED:	9/19/03PC	9/19/03PC	9/19/03PC	9/19/03PC